



10 CFR 50.73
L-2021-036
March 5, 2021

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555-0001

RE: Turkey Point Unit 3
Docket No. 50-250
Reportable Event: 2020-002-01
Date of Event: August 17, 2020
Title: Manual Reactor Trip in Response to High Steam Generator Level following
Inadvertent Opening of Feedwater Heater Bypass Valve (Rev 1)

The attached Licensee Event Report 05000250/2020-002-01 is submitted pursuant to 10 CFR 50.73 (a)(2)(iv)(A), due to actuation of the Unit 3 Reactor Protection System and Auxiliary Feedwater System. Revision 1 addresses additional information that became available during subsequent evaluation of the event.

If there are any questions, please call Mr. Robert Hess at 305-246-4112 or e-mail Robert.Hess@fpl.com.

Sincerely,

A handwritten signature in blue ink that reads 'M. Pearce'.

Michael Pearce
Site Vice President – Turkey Point Nuclear Plant
Florida Power & Light Company

Attachments: USNRC Forms 366 and 366A, current revision

cc: USNRC Senior Resident Inspector, Turkey Point Plant
USNRC Regional Administrator, Region II



LICENSEE EVENT REPORT (LER)

(See Page 3 for required number of digits/characters for each block)

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1. Facility Name Turkey Point Unit 3	2. Docket Number 05000	3. Page 250	3. Page 1 OF 3
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4. Title
Manual Reactor Trip in Response to High Steam Generator Level following Inadvertent Opening of Feedwater Heater Bypass Valve - Rev. 1

5. Event Date			6. LER Number			7. Report Date			8. Other Facilities Involved	
Month	Day	Year	Year	Sequential Number	Revision No.	Month	Day	Year	Facility Name	Docket Number
08	17	2020	2020	- 02 -	01	03	05	2021		05000
									Facility Name	Docket Number
										05000

9. Operating Mode 1	10. Power Level 86%
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11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: (Check all that apply)

<input checked="" type="checkbox"/> 10 CFR Part 20	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.36(c)(2)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	10 CFR Part 73
<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.69(g)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(4)
<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> 73.71(a)(5)
<input type="checkbox"/> 20.2203(a)(2)(i)	10 CFR Part 21	<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	<input type="checkbox"/> 73.77(a)(1)(i)
<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 21.2(c)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> 73.77(a)(2)(i)
<input type="checkbox"/> 20.2203(a)(2)(iii)	10 CFR Part 50	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	<input type="checkbox"/> 73.77(a)(2)(ii)
<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)	
<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)	
<input type="checkbox"/> OTHER (Specify here, in abstract, or NRC 366A).				

12. Licensee Contact for this LER

Licensee Contact David Stoia - Licensing Engineer	Phone Number (Include area code) (305) 246-6538
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13. Complete One Line for each Component Failure Described in this Report

Cause	System	Component	Manufacturer	Reportable to IRIS	Cause	System	Component	Manufacturer	Reportable to IRIS
B	JJ		S125	Yes	B	SJ	PS		Yes

14. Supplemental Report Expected		15. Expected Submission Date		Month	Day	Year
<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes (If yes, complete 15. Expected Submission Date)					

16. Abstract (Limit to 1560 spaces, i.e., approximately 15 single-spaced typewritten lines)

On 8/17/2020 at 2109 hours with Unit 3 at 100% power, the Low Pressure Feedwater Heater Bypass Control Valve inadvertently opened, causing an automatic turbine runback. Due to a deficiency associated with the design of the turbine runback program, levels in the Steam Generators increased in response to the runback. At approximately 86% reactor power, when 3C Steam Generator level increased to 78%, the reactor was manually tripped as directed by procedure. Following the reactor trip the Auxiliary Feedwater System automatically initiated, as expected, to maintain levels in the Steam Generators while Main Feedwater remained in service. Unit 3 was maintained stable in Mode 3 following the event.

This event is reportable pursuant to 10 CFR 50.73 (a)(2)(iv)(A) for the manual reactor trip and automatic initiation of the Auxiliary Feedwater System, which is listed as a reportable safety system by 10 CFR 50.73 (a)(2)(iv)(B)(6).

**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

(See NUREG-1022, R.3 for instruction and guidance for completing this form
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1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
Turkey Point Unit 3	05000-250	YEAR 2020	SEQUENTIAL NUMBER 002	REV NO. 01

NARRATIVE**EVENT DESCRIPTION**

On 8/17/2020 at 2109 hours with Unit 3 at 100% power, the Low Pressure Feedwater Heater Bypass Control Valve [SM, ISV] (CV-3-2011) inadvertently opened. As a design input to the turbine runback program, the repositioning of CV-3-2011 initiated an automatic Turbine Control System (TCS) [JJ] Medium Runback load reduction. Due to a design parameter that was not accounted for when the Medium Runback program was installed in 2011, the levels in all Steam Generators (S/G) [SG] increased in response to the runback. The 3C S/G level controller [JB, LC] was placed in manual mode as directed by the operating procedure. At 2111 hours, after reactor power had decreased to approximately 86% in response to the runback and 3C S/G level was at 78% and increasing, the reactor was manually tripped as directed by procedure. Unit 3 stabilized in Mode 3. During recovery from the reactor trip the Auxiliary Feedwater System [BA] automatically initiated, as expected, to maintain levels in the Steam Generators while Main Feedwater remained in service.

Two equipment performance issues were observed during the event. First, the Medium Runback program caused a mismatch between feedwater flow and reduced steam demand, resulting in increased levels in the S/Gs. The 3C S/G level controller was placed in manual but level was not turned before reaching the manual reactor trip limit. Second, while verifying that the turbine was tripped during the Immediate Operator Actions of the procedure, the Operator manually closed the Main Steam Isolation Valves (MSIVs) [SB, ISV] after observing that the 3B MSR Stop Valve (MOV-3-1432) [SB, ISV] had lost position indication.

CAUSE

The event was initiated when CV-3-2011 inadvertently opened, commencing a Medium Runback that caused rising S/G levels. CV-3-2011 opened because one of two pressure switches (PS-3-2011) that automatically open the valve had faulted, sending an open signal to the valve. Investigation into the cause of the PS-3-2011 failure revealed a stripped cover plate screw and indication of water intrusion.

The increasing S/G levels that prompted the manual reactor trip was caused by a mismatch between the TCS Medium Runback program and response capabilities of the Feedwater Regulating Valves (FRVs) [SJ, FCV] that prevented feedwater flow from reducing at the same rate as steam demand during the runback. The cause of the mismatch was the designer's failure to account for spurious opening of CV-2011 at full feedwater flow conditions when the input was added to the Medium Runback program in 2011 (See Root Cause Evaluation AR 2365716).

MOV-3-1432, 3B MSR Stop Valve, was subsequently found with tripped thermal relays, which de-energized the valve motor operator upon receipt of the automatic close signal. A broken wire in the control circuit was identified.

SAFETY SIGNIFICANCE

The safety significance of this event is low. The Medium Runback program serves no credited safety function. The MSIVs were manually closed by procedure in response to failed remote position indication of MOV-3-1432. All other equipment required in response to the manual reactor trip functioned as designed.



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NARRATIVE

CORRECTIVE ACTIONS

The failed pressure switch (PS-3-2011) was replaced. The TCS Medium Runback program was modified such that inadvertent opening of CV-3-2011 no longer initiates a turbine runback. Plant operating procedures were revised to direct a manual runback of turbine load if CV-2011 spuriously opens under full feedwater flow conditions. The broken wire found in the MOV-3-1432 control circuit was replaced. To prevent a similar occurrence on Unit 4, the TCS modification was completed during the Unit 4 Fall 2020 Refueling Outage, and corresponding procedure changes made. Additional actions to address contributing causes were prescribed in Root Cause Evaluation AR 2365716.

ADDITIONAL INFORMATION

EIIS Codes are shown in the format [IEEE system identifier, component function identifier, second component function identifier (if appropriate)].

SIMILAR EVENTS

A review of reactor trip events over the previous 10 years was performed to identify potentially similar events or patterns. This period of time coincides with the installation of the TCS Medium Runback program. No events were identified that involved manual reactor trips due to elevated steam generator levels following a turbine runback.